



2631  
\$

Please type a plus sign (+) inside this box → ☐

PTO/SB/21 (08-00)  
Approved for use through 10/31/2002. OMB 0651-0031  
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

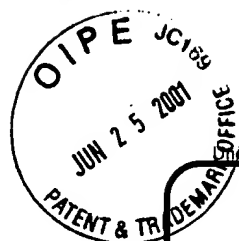
<b>TRANSMITTAL FORM</b> <i>(to be used for all correspondence after initial filing)</i>	<b>Application Number</b>	09/670,475	
	<b>Filing Date</b>	September 26, 2000	
	<b>First Named Inventor</b>	Brian L. Hinman	
	<b>Group Art Unit</b>	2631	
	<b>Examiner Name</b>	Unknown	
<b>Total Number of Pages in This Submission</b>	23	<b>Attorney Docket Number</b>	PA1604US

ENCLOSURES (check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Assignment Papers (for an Application) <input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input checked="" type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): <b>Detailed description of References, Check, Postcard</b>
<b>Remarks</b> Petition to Make Special. Total page number does not include postcard and check(s).		<b>RECEIVED</b> JUL 05 2001 Technology Center

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Carr & Ferrell, LLP Cust. No. 22830
Signature	Wendi R. Schepler
Date	6/21/2001

CERTIFICATE OF MAILING	
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on this date: <u>June 21, 2001</u>	
Typed or printed name	Wendi R. Schepler
Signature	Wendi R. Schepler
Date	6/21/2001

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



PTO/SB/17 (11-00)  
Approved for use through 10/31/2002. OMB 0651-0032  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE  
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

# FEE TRANSMITTAL for FY 2001

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT (\$130.00)

## Complete if Known

Application Number	09/670,475
Filing Date	September 26, 2000
First Named Inventor	Brian L. Hinman
Examiner Name	Unknown
Group Art Unit	2631
Attorney Docket No.	PA1604US

## METHOD OF PAYMENT

1. ☒ The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

Deposit Account Number: 06-0600  
Deposit Account Name: Carr & Ferrell, LLP

☒ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17

☒ Applicant claims small entity status. See 37 CFR 1.27

2. ☒ Payment Enclosed:

☒ Check ☐ Credit card ☐ Money Order ☐ Other

## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
101	710	201	355			Utility filing fee	
106	320	206	160			Design filing fee	
107	490	207	245			Plant filing fee	
108	710	208	355			Reissue filing fee	
114	150	214	75			Provisional filing fee	

SUBTOTAL (1) (\$0)

### 2. EXTRA CLAIM FEES

Total Claims: 20 - 20 = 0 X Fee from below = 0  
Independent Claims: 3 - 3 = 0 X Fee from below = 0  
Multiple Dependent: 0 X Fee from below = 0

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description
103	18	203	9			Claims in excess of 20
102	80	202	40			Independent claims in excess of 3
104	270	204	135			Multiple dependent claim, if not paid
109	80	209	40			** Reissue independent claims over original patent
110	18	210	9			** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$0)

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
105	130	205	65			Surcharge - late filing fee or late fee	2600
127	50	227	25			Surcharge - late provisional filing fee or cover sheet	
139	130	139	130			Non-English specification	
147	2,520	147	2,520			For filing a request for ex parte reexamination	
112	920*	112	920*			Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*			Requesting publication of SIR after Examiner action	
115	110	215	55			Extension for reply within first month	
116	390	216	195			Extension for reply within second month	
117	890	217	445			Extension for reply within third month	
118	1,390	218	695			Extension for reply within fourth month	
128	1,890	228	945			Extension for reply within fifth month	
119	310	219	155			Notice of Appeal	
120	310	220	155			Filing a brief in support of an appeal	
121	270	221	135			Request for oral hearing	
138	1,510	138	1,510			Petition to institute a public use proceeding	
140	110	240	55			Petition to revive - unavoidable	
141	1,240	241	620			Petition to revive - unintentional	
142	1,240	242	620			Utility issue fee (or reissue)	
143	440	243	220			Design issue fee	
144	600	244	300			Plant issue fee	
122	130	122	130			Petitions to the Commissioner	130
123	50	123	50			Processing fee under 37 CFR 1.17(q)	
126	180	126	180			Submission of Information Disclosure Stmt	
581	40	581	40			Recording each patent assignment per property (times number of properties)	
146	710	246	355			Filing a submission after final rejection (37 CFR § 1.129(a))	
149	710	249	355			For each additional invention to be examined (37 CFR § 1.129(b))	
179	710	279	355			Request for Continued Examination (RCE)	
169	900	169	900			Request for expedited examination of a design application	

Other fee (specify) \_\_\_\_\_

\*Reduced by Basic Filing Fee Paid

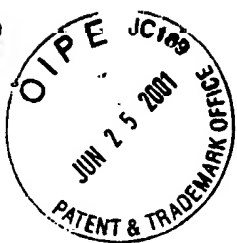
SUBTOTAL (3) (\$130)

## SUBMITTED BY

Name (Print/Type)	Wendi R. Schepler	Registration No. (Attorney/Agent)	43,091	Telephone	(650) 812-3400
Signature				Date	June 21, 2001

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



#3/Ald  
Special  
7-9-01

IN THE  
UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Brian L. Hinman et al.  
SERIAL NO: 09/670,475  
FILED: September 26, 2000  
TITLE: Load Coil and DSL Repeater Including Same  
EXAMINER: Unknown  
ART UNIT: 2631  
ATTY. DKT. NO: PA1604US

RECEIVED  
JUL 05 2001  
Technology Center 2600

CERTIFICATE OF MAILING

I hereby certify that this paper is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231, on the date printed below:

Date: 6/21/2001

Wendi R. Schepler  
Wendi R. Schepler

Commissioner for Patents  
Washington, DC 20231

PETITION TO MAKE SPECIAL UNDER M.P.E.P. § 708.02, VIII

1. **Petition**

Applicants hereby petition to make this application, which has not received any examination by the Examiner, special.

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED  
DATE 00000092 BY 09570475

130.00 OP

**2. Claims**

All the claims in this case are directed to a single invention.

If the Office determines that all the claims presented are not obviously directed to a single invention, then Applicants will make an election without traverse as a prerequisite to the grant of special status.

RECEIVED

JUL 05 2001

Technology Center 2600

**3. Search**

A pre-examination search has been made by a professional search firm. The field of search covered Class 330 subclasses 03, 124R, 124D, and 295; and Class 370 subclasses 293, 343, 419, 463, 492, and 493; Class 375 subclasses 211, 222, 232, and 324; and Class 379, subclasses 296, 338, and 399.

**4. Copy of references**

A copy of the references deemed most closely related to the subject matter encompassed by the claims has been previously submitted with an Information Disclosure Statement filed on December 26, 2000.

**5. Detailed discussion of the references**

There is submitted herewith a detailed discussion of the references, which discussion particularly points out how the claimed subject matter is distinguishable over the references.

6. Fee

The fee for this petition required by 37 C.F.R. 1.17(i) is to be paid by the attached check for \$130.00.

Respectfully submitted,

Brian L. Hinman et al.

Dated: 6/21/2001

By: Wendi R. Schepler

Wendi R. Schepler, Reg. No. 43,091

Carr & Ferrell LLP

2225 E. Bayshore Road, Suite 200

Palo Alto, CA 94303

Tel: (650) 812-3400

Fax: (650) 812-3444

RECEIVED  
JUL 05 2001  
Technology Center 2600



IN THE  
UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Brian L. Hinman et al.  
SERIAL NO: 09/670,475  
FILED: September 26, 2000  
TITLE: Load Coil and DSL Repeater Including Same  
EXAMINER: Unknown  
ART UNIT: 2631  
ATTY. DKT. NO: PA1604US

RECEIVED  
JUL 05 2001  
Technology Center 2600

---

**CERTIFICATE OF MAILING**

I hereby certify that this paper is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231, on the date printed below:

Date: 6/21/2001

Wendi R. Schepler  
Wendi R. Schepler

---

Commissioner for Patents  
Washington, DC 20231

**DETAILED DISCUSSION OF THE REFERENCES ACCOMPANYING**  
**PETITION TO MAKE SPECIAL**

Dear Sir:

In support of the Petition to Make Special, a detailed discussion of the references cited in the Information Disclosure Statement follows:

**U.S. Patent No. 4,392,225**

Issued: July 5, 1983

Title: Telephone Carrier System Repeater and Power Supply

Inventor: Donald Wortman

Detailed Discussion:

Wortman discloses a telephone carrier system repeater and power supply. In general, Wortman teaches a signal-amplifying telephone carrier repeater, which is automatically self-adjusting for both cable length and cable gauge in a plural channel, frequency division multiplexed, amplitude modulated carrier system. A subscriber power supply, which delivers sufficient power to the subscriber terminal load despite variations in load current due to changes in the number of channels in the carrier system is also disclosed. Wortman does not, however, address amplification of Digital Subscriber Line (DSL) signals. Moreover, Wortman does not disclose the inclusion of Plain Old Telephone Service (POTS) loading coils within a DSL repeater to improve POTS-band signal transmission. In addition, Wortman does not address the use of POTS loading coils to enhance POTS signal gain across the coils while also providing high impedance to DSL signals. Accordingly, Applicants submit that the pending claims are patentably distinguishable over the Wortman reference.

**U.S. Patent No. 5,726,980**

Issued: March 10, 1998

Title: Time Division Duplex Communications Repeater

Inventor: Robin P. Rickard

Detailed Discussion:

Rickard discloses a Time Division Duplex (TDD) communications repeater for amplifying TDD signals transmitted over mains electricity cables. In particular, Rickard teaches converting the signals from one carrier frequency to a different carrier frequency and then amplifying the converted signal. Rickard does not teach amplification of DSL signals. Further, Rickard does not address improving transmission of POTS-band signals by a DSL repeater nor does Rickard teach a repeater that includes POTS-band loading coils. In addition, Rickard does not address the use of POTS loading coils to enhance

RECEIVED

JUL 05 2001

Technology Center 2600

POTS signal gain across the coils while also providing high impedance to DSL signals. Hence, Applicants submit that the pending claims are patentably distinguishable over the Rickard reference.

**U.S. Patent No. 3,180,938**

Issued: April 27, 1965

Title: Repeater Terminal For Frequency Division Multiplex Communication Systems

Inventor: W. L. Glomb

Detailed Discussion: Glomb discloses a repeater terminal for frequency division multiplex communication systems. The Glomb repeater terminal employs demodulation, modulation, phase comparator, and oscillation components, which are not required by the pending claims of the referenced case. Moreover, Glomb fails to teach or suggest amplification of DSL signals. Further, Glomb does not address the use of a POTS load coil to enhance POTS signal gain across the coil while also providing high impedance to DSL signals. In addition, Glomb does not teach a repeater having a load coil for improving POTS service over a local loop in addition to improving DSL service over the same local loop. Therefore, Applicants submit that the pending claims are patentably distinguishable over the Glomb reference.

**U.S. Patent No. 3,548,120**

Issued: December 15, 1970

Title: Transmission Line Repeater Station for Two Signals Traveling in Opposite

Directions

Inventor: Alexandre Tarassoff

Detailed Discussion:

The Tarassoff reference discloses a transmission line repeater station for two signals traveling in opposite directions. The disclosed repeater includes a common amplifier, attenuator and equalizer for oscillations of both bands. Pilot oscillations in one band are employed to control the attenuator, and pilot oscillations in the other band are used to control the equalizer. The present DSL repeater, in contrast, does not employ pilot

RECEIVED  
JUL 05 2001  
Technology Center 2600



signals to control an attenuator or an equalizer. Moreover, Tarassoff does not teach or suggest amplification of DSL signals. Further, Tarassoff does not address the use of a POTS load coil to enhance POTS signal gain across the coil while also providing high impedance to DSL signals. In addition, the Tarassoff repeater also does not include a POTS load coil for improving transmission of POTS-band signals in addition to DSL-band signals. Accordingly, Applicants submit that the pending claims of the referenced application are patentably distinguishable over the Tarassoff reference.

**U.S. Patent No. 3,873,936**

Issued: March 25, 1975

Title: Apparatus for Reducing Distortion in a Repeated Transmission System

Inventor: Yo-Sung Cho

Detailed Discussion:

The Cho reference discloses a repeater amplifier for reducing distortion in a repeated transmission system. The Cho apparatus purports to reduce distortion by generating a compensating signal in a feedforward amplifier network. In the feedforward network, an auxiliary amplifier having substantially the same gain and distortion characteristics as the main power amplifier generates a compensating signal having a linear component equal to the linear component of the output signal of the power amplifier and a distortion component equal in magnitude to the distortion component of the output signal of the power amplifier. The Cho reference does not address, nor disclose an apparatus for, amplification of upstream and downstream DSL signals. Moreover Cho fails to disclose a repeater having a load coil for improving transmission of POTS-band signals. In addition, Cho does not address the use of a POTS load coil to enhance POTS signal gain across the coil while also providing high impedance to DSL signals. Hence, Applicants submit that the pending claims of the referenced application are patentably distinguishable over the Cho reference.

**U.S. Patent No. 3,944,723**

Issued: March 16, 1976

Title: Station for Power Line Access Data System

Inventor: Kouan Fong

Detailed Discussion:

Fong discloses a central station that acts as an interface between a two-way communication system superimposed on a power distribution network and a data processing computer. Associated with this central station, Fong discloses intermediate repeaters, substation repeaters, and pole repeaters. The Fong repeaters do not provide, however, for amplification of DSL signals over a local loop comprising twisted pair wiring. Moreover, the Fong repeaters do not include POTS load coils for improving POTS service. In addition, Fong does not address the use of POTS load coils to enhance POTS signal gain across the coils while also providing high impedance to DSL signals. Hence, Applicants submit that the pending claims of the referenced application are patentably distinguishable over the Fong reference.

**U.S. Patent No. 3,962,549**

Issued: June 8, 1976

Title: Threshold Detector Circuitry, as for PCM Repeaters

Inventor: Borys Zuk

Detailed Discussion:

The Zuk reference relates to detector circuitry useful in discriminating Pulse Code Modulation (PCM) pulses from noise on a telephone cable pair to facilitate noise-free regeneration of the pulses in repeater circuitry. The repeater disclosed is a PCM repeater and is not suitable for amplifying DSL signals over a local loop as it is configured to regenerate PCM signals rather than amplifying downstream and upstream DSL signals, such as ADSL signals. Further, Zuk does not address the use of a POTS load coil to enhance POTS signal gain across the coil while also providing high impedance to DSL signals. In addition, Zuk does not teach or suggest a repeater that includes a POTS loading coil for improving POTS service over the same loop in addition to amplifying DSL data signals. Therefore, Applicants submit that the pending claims of the referenced application are patentably distinguishable over the Zuk reference.

**U.S. Patent No. 4,025,737**

Issued: May 24, 1977

Title: Repeater Monitoring and Fault Location

Inventor: Sherman T. Brewer

Detailed Discussion:

The Brewer reference relates to modulation monitoring and fault location of repeaters in submarine cable systems. The Brewer repeater includes an oscillator for generating a signal at a frequency in the cutapart region between high and low frequency transmission bands and which is uniquely identifiable to that repeater. In contrast, the present DSL repeater does not require such an oscillator. Moreover, the Brewer reference fails to teach or suggest a repeater for amplifying DSL signals as they traverse a local loop between a central office and a CPE. Further, the Brewer reference does not address the use of a POTS load coil to enhance POTS signal gain across the coil while also providing

high impedance to DSL signals. In addition, the Brewer reference does not contemplate incorporating a POTS load coil with a repeater to improve POTS performance in addition to amplifying DSL data signals. Accordingly, Applicants submit that the pending claims are patentably distinguishable over the Brewer reference.

**U.S. Patent No. 4,131,859**

Issued: December 26, 1978

Title: Method of Compensation of Intermodulation Noise and Devices for the  
Implementing Thereof

Inventor: Pierre Valle

Detailed Discussion:

The Valle reference relates to chains of electronic amplifiers, such as a cable system for analog carrier transmission using repeaters and aims to reduce the intermodulation noise generated in a chain of amplifiers in order to improve the signal-to-noise ratio thereof and consequently to improve the quality of the transmitted signal. The Valle repeater includes a phase correcting network that modifies the phases of the incoming signals to improve the transmitted signal. In contrast, the present DSL repeater does not require such a phase correcting network. Moreover, the Valle reference does not address the use of a POTS load coil to enhance POTS signal gain across the coil while also providing high impedance to DSL signals. In addition, the Valle reference does not teach or suggest amplification of DSL signals nor the combination of a POTS load coil with a DSL repeater for improving POTS service as well as amplifying upstream and downstream DSL data signals. Therefore, Applicants submit that the pending claims in the referenced application are patentably distinguishable over the Valle reference.

**U.S. Patent No. 4,242,542**

Issued: December 30, 1980

Title: Frogging Signal Repeater for a Transmission Line Communications System

Inventor: Mahlon D. Kimbrough

**Detailed Discussion:**

The Kimbrough reference relates to a multi-channel communication system having a transmission cable connected between two terminal stations. In particular, Kimbrough discloses a frogging repeater connected between two signal sources. Each signal source generates information signals on a group of relatively high frequency carrier signals and receives information signals on a group of relatively low frequency carrier signals with the frogging signal repeater connected in the trunk line for translating the high and low frequency groups. The repeater includes means responsive to a high frequency group signal from one signal source for generating a coordination reference signal representing the length of the transmission line between the repeater and the one signal source and means responsive to the coordination reference signal and the high frequency group signals from the other signal source for generating the low frequency group signals to the one signal source whereby the low frequency group signals arrive at the one signal source at a predetermined magnitude. Kimbrough fails to disclose a repeater for amplifying DSL signals as they traverse a local loop between a central office and a CPE. Moreover, Kimbrough does not address the use of POTS loading coils to enhance POTS signal gain across the coils while also providing high impedance to DSL signals. In addition, Kimbrough does not teach or suggest a repeater having loading coils to improve POTS service in addition to improving DSL service over the same loop. Accordingly, Applicants submit that the pending claims of the referenced application are patentably distinguishable over the Kimbrough reference.

**U.S. Patent No. 4,462,105**

Issued: July 24, 1984

Title: Transceiver Unit for a Telecommunications System

Inventors: Wagner et al.

Detailed Discussion:

The Wagner reference relates to a transceiver forming an interface between a digital telephone apparatus and a telephone speech transmission line for duplex communication. The Wagner transceiver is disclosed as being for use with a digital telephone apparatus adapted to be connected for duplex communication to a telephone speech transmission line includes a receiving unit and a transmitting unit. The receiving unit processes an incoming serial ternary level signal stream composed of alternate mark inverted (AMI) encoded pulses and received from the transmission line. A compensation filter compensates distortions of the transmitted signals. A full wave rectifier circuit generates unipolar output signals. A pulse detection circuit derives rectangular pulses from the unipolar output signals. A phase-locked loop (PLL) circuit reconstructs a clock pulse train from the rectangular pulses. The transmitting unit receives an outgoing serial data stream from the telephone apparatus and internal clock pulses from that PLL circuit and includes means for converting the pulses of the outgoing data stream into AMI encoded signals. Wagner fails to disclose a repeater for amplifying DSL signals as they traverse a local loop between a central office and a CPE. Moreover, Wagner does not address the use of a POTS load coil to enhance POTS signal gain across the coil while also providing high impedance to DSL signals. In addition, Wagner does not teach or suggest a repeater having a load coil to improve POTS service in addition to improving DSL service over the same loop. Accordingly, Applicants submit that the pending claims of the referenced application are patentably distinguishable over the Wagner reference.

**U.S. Patent No. 4,583,220**

Issued: April 15, 1986

Title: Analog Subscriber Carrier System Repeater with Automatic Gain and Slope  
Correction

Inventors: Blackburn et al.

Detailed Discussion:

The Blackburn reference relates to analog repeaters that automatically adapt to various changes in cable characteristics. The Blackburn repeater employs two amplifiers in each transmission path. A gain amplifier sets the levels to a predetermined value and a slope amplifier corrects for undesirable frequency slope. The Blackburn repeater uses a microprocessor, programmed to identify the cable transmission characteristics, that uses status signals derived from two detected pilots to produce control signals to adjust and optimize the gain and slope settings of line amplifiers. In contrast with the claimed invention, however, Blackburn does not disclose an analog repeater for amplifying upstream and downstream DSL signals as they traverse a local loop between a central office and a CPE. Moreover, Blackburn does not address the use of a POTS load coil to enhance POTS signal gain across the coil while also providing high impedance to DSL signals. In addition, Blackburn does not teach or suggest a repeater having a load coil to improve POTS service in addition to improving DSL service over the same loop.

Accordingly, Applicants submit that the pending claims of the referenced application are patentably distinguishable over the Blackburn reference.

**U.S. Patent No. 4,633,459**

Issued: December 30, 1986

Title: Repeater for Carrier Subscriber Communication System

Inventor: Tom Blackburn

Detailed Discussion:

This reference relates to a repeater apparatus for locating faults in a carrier subscriber line. The repeater is for location between a central office and a subscriber station. Each repeater includes a microprocessor or microcomputer responsive to control signals from an office computer. Blackburn does not, however, disclose a repeater for location

between a central office and a CPE along a local loop. Moreover, Blackburn does not teach or suggest amplifying downstream or upstream DSL signals by use of such a repeater. Further, Blackburn does not address the use of POTS loading coils to enhance POTS signal gain across the coils while also providing high impedance to DSL signals. In addition, Blackburn does not teach or suggest a DSL repeater having POTS loading coils for improving POTS transmission over the local loop in addition to amplifying DSL data signals. Accordingly, Applicants submit that the pending claims of the referenced patent application are patentably distinguishable over this Blackburn reference.

**U.S. Patent No. 4,656,628**

Issued: April 7, 1987

Title: Digital Signal Transmission System

Inventor: Yoichi Tan

Detailed Discussion:

The Tan reference relates to a digital signal transmission system for use in a communication system in which a digital signal is transmitted in a time division multiplexing mode over a communication cable, wherein sound transmission can be effected with multifunctions between multiple stations. Tan does not teach or suggest amplifying downstream or upstream DSL signals by use of a repeater positioned along a local loop between a central office and a CPE. Moreover, Tan does not address the use of POTS loading coils to enhance POTS signal gain across the coils while also providing high impedance to DSL signals. In addition, Tan does not teach or suggest a DSL repeater having POTS loading coils for improving POTS transmission over the local loop in addition to amplifying DSL data signals. Accordingly, Applicants submit that the pending claims of the referenced patent application are patentably distinguishable over the Tan reference.



**U.S. Patent No. 4,667,319**

Issued: May 19, 1987

Title: Digital Repeater with 3-Way Branching of Service Channels

Inventor: Stanley Chum

Detailed Discussion:

This reference relates to a bi-directional 3-way branching apparatus to drop and insert channels in a digital transmission system. In particular, Chum discloses techniques for interfacing service channel facilities at a repeater station with a digital transmission facility, includes a technique that avoids dual D/A and A/D conversion of digital service channel through path signals by performing the 3-way branching at a repeater in the digital domain. Chum does not, however, disclose a DSL repeater for location between a central office and a CPE along a local loop. Moreover, Chum does not teach or suggest amplifying downstream or upstream DSL signals by use of a repeater. Further, Chum does not address the use of POTS loading coils to enhance POTS signal gain across the coils while also providing high impedance to DSL signals. In addition, Chum does not teach or suggest a DSL repeater having POTS loading coils for improving POTS transmission over the local loop in addition to amplifying DSL data signals.

Accordingly, Applicants submit that the pending claims of the referenced patent application are patentably distinguishable over the Chum reference.

**U.S. Patent No. 4,766,606**

Issued: August 23, 1988

Title: Signal Repeater for Multi-subscriber communication over single pair telephone line

Inventors: Bardutz et al.

Detailed Discussion:

The Bardutz reference relates to a signal repeater for regenerating digitally encoded signals transmitted in bursts over a single pair telephone line to enable simultaneous communication between a telephone central office and a plurality of subscriber transmitter/receivers. The Bardutz signal repeater decouples signals from the line for regeneration and recouples the regenerated signals onto the line. The decoupled signals

are decoded and then regenerated to replicate the signals originally produced. The Bardutz repeater then re-encodes the regenerated signals and recouples the same onto the telephone line. In contrast, the DSL repeater of the instant application does not use signal regeneration techniques and neither decodes or re-encodes signals traversing the local loop. Further, Bardutz does not disclose a DSL repeater for location between a central office and a CPE along a local loop. Moreover, Bardutz does not teach or suggest amplifying downstream or upstream DSL signals by use of such a repeater. Further, Bardutz does not address the use of POTS loading coils to enhance POTS signal gain across the coils while also providing high impedance to DSL signals. In addition, Bardutz does not teach or suggest a DSL repeater having POTS loading coils for improving POTS transmission over the local loop in addition to amplifying DSL data signals. Accordingly, Applicants submit that the pending claims of the referenced patent application are patentably distinguishable over the Bardutz reference.

**U.S. Patent No. 5,181,198**

Issued: January 19, 1993

Title: Coordinated Transmission for Two-Pair Digital Subscriber Lines

Inventor: Joseph Lechleider

Detailed Discussion:

This reference relates to transmitting digital information over two coordinated propagation paths, and to concomitant techniques for encoding and decoding the digital information. Lechleider does not, however, disclose a DSL repeater for location between a central office and a CPE along a local loop. Moreover, Lechleider does not teach or suggest amplifying downstream or upstream DSL signals by use of such a repeater. Further, Lechleider does not address the use of POTS loading coils to enhance POTS signal gain across the coils while also providing high impedance to DSL signals. In addition, Lechleider does not teach or suggest a DSL repeater having POTS loading coils for improving POTS transmission over the local loop in addition to amplifying DSL data signals. Accordingly, Applicants submit that the pending claims of the referenced patent application are patentably distinguishable over the Lechleider reference.

**U.S. Patent No. 5,394,401**

Issued: February 28, 1995

Title: Arrangement for a Token Ring Communications Network

Inventors: Patrick et al.

Detailed Discussion:

This reference relates to configuration control of a ring network including a plurality of interconnected wiring concentrators. Patrick discloses an arrangement for a token ring communications network that includes notes for transmitting and receiving data signals. Patrick also discloses a repeater for amplifying and reconditioning communications signals so that they may be communicated a greater distance, such as distances greater than 100 meters. Patrick does not, however, disclose a DSL repeater for location between a central office and a CPE along a local loop. Moreover, Patrick does not teach or suggest amplifying downstream or upstream DSL signals by use of such a repeater. Further, Patrick does not address the use of POTS loading coils to enhance POTS signal gain across the coils while also providing high impedance to DSL signals. In addition, Patrick does not teach or suggest a DSL repeater having POTS loading coils for improving POTS transmission over the local loop in addition to amplifying DSL data signals. Accordingly, Applicants submit that the pending claims of the referenced patent application are patentably distinguishable over the Patrick reference.

**U.S. Patent No. 5,455,538**

Issued: October 3, 1995

Title: Linear Amplifier for Amplifying a Composite Signal of Plural Frequency

Components

Inventors: Kobayashi et al.

Detailed Discussion:

This reference relates to an amplifier having improved linearity without lowering an electric power load efficiency. In particular, Kobayashi discloses a feed-forward type amplifier that reduces 3<sup>rd</sup> order intermodulation distortion component without lowering the voltage load efficiency. Kobayashi does not, however, disclose a DSL repeater for location between a central office and a CPE along a local loop. Moreover, Kobayashi

does not teach or suggest amplifying downstream or upstream DSL signals by use of such a repeater. Further, Kobayashi does not address the use of POTS loading coils to enhance POTS signal gain across the coils while also providing high impedance to DSL signals. In addition, Kobayashi does not teach or suggest a DSL repeater having POTS loading coils for improving POTS transmission over the local loop in addition to amplifying DSL data signals. Accordingly, Applicants submit that the pending claims of the referenced patent application are patentably distinguishable over the Kobayashi reference.

**U.S. Patent No. 5,526,343**

Issued: June 11, 1996

Title: Auxiliary Service Channel Signal Transmission System

Inventors: Aizawa et al.

Detailed Discussion:

This reference relates to a transmission system for auxiliary service channel signals that are extracted by digital multi-microwave transmission terminal offices and IF repeater offices. The repeater office transmits an auxiliary signal after a given time has elapsed following the transmission of an auxiliary signal by a terminal office. Aizawa does not, however, disclose a DSL repeater for location between a central office and a CPE along a local loop. Moreover, Aizawa does not teach or suggest amplifying downstream or upstream DSL signals by use of such a repeater. Further, Aizawa does not address the use of POTS loading coils to enhance POTS signal gain across the coils while also providing high impedance to DSL signals. In addition, Aizawa does not teach or suggest a DSL repeater having POTS loading coils for improving POTS transmission over the local loop in addition to amplifying DSL data signals. Accordingly, Applicants submit that the pending claims of the referenced patent application are patentably distinguishable over the Aizawa reference.

**U.S. Patent No. 5,822,325**

Issued: October 13, 1998

Title: Integrated Twisted Pair Filter with a Secure RIC Function

Inventors: Segaram et al.

**Detailed Discussion:**

This reference relates to repeater interface controller circuits (RIC) for use in local area networks. The Segaram RIC uses two filters to filter link pulse signals and data signals for a plurality of ports to concurrently provide filtered link pulses to some ports and filtered data signals to other ports. Segaram does not, however, disclose a DSL repeater for location between a central office and a CPE along a local loop. Moreover, Segaram does not teach or suggest amplifying downstream or upstream DSL signals by use of such a repeater. Further, Segaram does not address the use of POTS loading coils to enhance POTS signal gain across the coils while also providing high impedance to DSL signals. In addition, Segaram does not teach or suggest a DSL repeater having POTS loading coils for improving POTS transmission over the local loop in addition to amplifying DSL data signals. Accordingly, Applicants submit that the pending claims of the referenced patent application are patentably distinguishable over the Segaram reference.

**U.S. Patent No. 5,974,137**

Issued: October 26, 1999

Title: AGC Amplifier for Two-Wire Line Conditioner

Inventors: Sheets et al.

**Detailed Discussion:**

This reference relates to a telephone line conditioner device installed in the network between the telephone company network and the lines leading to the customer premises for improving the transmission quality of the telephone lines. Sheets does not, however, disclose a DSL signal repeater for location between a central office and a CPE along a local loop. Moreover, Sheets does not teach or suggest amplifying downstream or upstream DSL signals by use of such a repeater. Further, Sheets does not address the use of POTS loading coils to enhance POTS signal gain across the coils while also providing high impedance to DSL signals. In addition, Sheets does not teach or suggest a DSL

repeater having POTS loading coils for improving POTS transmission over the local loop in addition to amplifying DSL data signals. Accordingly, Applicants submit that the pending claims of the referenced patent application are patentably distinguishable over the Sheets reference.

Respectfully submitted,

Brian L. Hinman et al.

Dated: 6/21/2001

By: Wendi R. Schepler

Wendi R. Schepler, Reg. No. 43,091

Carr & Ferrell LLP

2225 E. Bayshore Road, Suite 200

Palo Alto, CA 94303

Tel: (650) 812-3400

Fax: (650) 812-3444

RECEIVED  
JUL 05 2001  
Technology Center 2600